IN THE SPECIFICATION:

Page 1, top of page, delete "November 9, 1999".

Page 1, between the title and the first paragraph, insert:

-- BACKGROUND OF THE INVENTION

1. Field of the Invention --

Please substitute the following paragraph for the first paragraph on page 1.

A1

The invention is directed to a method for processing workpieces by means of laser radiation, wherein the radiation is focused by a processing optic onto a processing site. The light radiation emanating from the workpiece is received utilizing the processing optic and is analyzed by a detector. An optical measurement with respect to a surface of the workpiece is performed by means of an external source of measuring light, utilizing measuring light reflected from the processing area.

After paragraph immediately above, insert:

-- 2. Description of the Prior Art --

After the second paragraph on page 1, insert:

-- SUMMARY OF THE INVENTION --

Please substitute the following paragraph for the first paragraph on page 2.

This object is accomplished by using the same processing optic for the light radiation used for process monitoring and the reflected measuring light used for optical measurement. It is of significance for the invention that the processing optic detects not only the light radiation used for process monitoring, but also the measuring light used for optical measurement that is reflected by the workpiece. This eliminates the need to install measuring systems for the measuring light on a measuring head or near the processing optic, such measuring systems being lens systems that can become contaminated during industrial operation and can limit the range of application of the workpiece processing operation.

A2

Please substitute the following paragraph for the first paragraph on page 6.

B3

The invention is also directed to a device for processing workpieces by means of high-energy radiation, particularly by means of laser radiation. The device comprises a processing optic that focuses the radiation onto a processing site and that detects light radiation emanating from the workpiece for a detector of a process monitoring system having a predefined optical axis. The device further comprises an external measuring-light source whose measuring light is reflected from a processing area of the workpiece and is used to perform an

A3

optical measurement at the surface of the workpiece. The measuring light is detected by means of the same processing optic that focuses the radiation onto the processing site.

On page 9, before the first line, insert:

-- BRIEF DESCRIPTION OF THE DRAWINGS --.

Please substitute the following for the first paragraph on page 9.

A4

The invention is described with reference to the exemplary embodiments depicted in the drawings, wherein:

On page 9, after the description of the drawings, insert:

-- DESCRIPTION OF THE PREFERRED EMBODIMENTS --

Please substitute the following paragraph for the first paragraph on page 11.

A5

Line or area sensors are preferably used for observation accompanied by local resolution. The radiation incident on one or more pixels is analyzed differently according to the sensor arrangement and is assigned to different locations in the processing area. Thus, sensors can be used to observe Zone I, other sensors to observe Zone II, and third sensors of the same detector to observe Zone III. Individual ones of these sensors can form windows that are assigned to only one sub-area of a zone. In particular some of the sensors of detector 11 are assigned to observe Zone I in order to detect light radiation

used for process monitoring, i.e., the secondary light radiation from the vapor capillary 22. Further, at least one additional group of sensors is assigned to detect measuring light that is reflected by the processing area during an optical measurement. Figure 4b provides a representation of light line 30 on the workpiece 20 in which the light line is projected in the shape of a circle. The center of the circle coincides with the vapor capillary 22 and is therefore defined by the position of the optical axis 10. By means of line 30, the workpiece geometry can be tracked ahead of the processing site 40 and in the region of the finished seam 24. For purposes of explanation, Fig. 4b shows a joint line 42 formed between two mutually abutting workpiece portions. If these workpiece portions do not fit completely snugly against each other, a pit is present and a "fraying" 43 of light line 30 can be seen, since the light is not projected onto workpiece 20 vertically to the plane of representation, but instead, for example as shown in Fig. 5a, at an angle to optical axis 10. In the region of weld seam 24, the "fraying" 43, which is an outward fraying in Fig. 4b, is located opposite a centripetally oriented concavity 44 of the circular light line, since the weld seam is elevated above the level of the workpiece 20. Different seam geometries therefore result in different light paths, for example in the presence of notches, seam

convexities, seam concavities or holes. Similarly, mapping of the workpiece geometry ahead of the processing site 40 permits the detection of edge displacement or cracking, for example.

Please substitute the following paragraph for the third paragraph on page 13.

Figure 3 shows the arrangement of a measuring-light source 33 that is disposed inside housing 2 between focusing lens 6 and workpiece 20. Its beams 31 of measuring light are realized as the envelope of a truncated cone, since they generated ring-shaped light. Disposing measuring-light source 33 in front of mirror 8 and lens 6 in the direction of the laser radiation permits greater latitude of design in the region of the processing optic, and especially in choosing the shape of the measuring-light beam. This shape in turn makes it possible to perform not only distance measurement, but also mapping of the workpiece geometry and the geometry of the melt 23 in addition to process monitoring.

On page 15, top of page, delete "November 9, 1999".

On page 15, before the claim, delete "Patent Claims" and insert – What is claimed is: --

Please substitute the enclosed Abstract of the Disclosure for the originally submitted "Abstract".

The foregoing amended paragraphs of the specification include the amendments shown in the following versions with markings to show changes made.

Page 1, first paragraph:

The invention is directed to a method [having the features of the preamble to claim 1] <u>for processing workpieces by means of laser radiation, wherein the radiation is focused by a processing optic onto a processing site. The light radiation emanating from the workpiece is received utilizing the processing optic and is analyzed by a detector. An optical measurement with respect to a surface of the workpiece is performed by means of an external source of measuring light, utilizing measuring light reflected from the processing area.</u>

Page 2, first paragraph:

This object is accomplished by [means of the method steps recited in the characterizing part of Claim 1] <u>using the same processing optic for the light radiation used for process monitoring and the reflected measuring light used for optical measurement</u>. It is of significance for the invention that the processing optic detects not only the light radiation used for process monitoring, but also the measuring light used for optical measurement that is reflected by the workpiece. This eliminates the need to install measuring systems for the measuring light on

[the] a measuring heads or near the processing optic, such measuring systems being lens systems that can become contaminated during industrial operation and can limit the range of application of the workpiece processing operation.

Page 6, first paragraph:

The invention is also directed to a device [having the feature of the preamble to claim 12. This device also accommodates the above-recited critical features of the method referred to, and the object stated hereinabove is achieved by means of the features recited in the characterizing part of claim 12] for processing workpieces by means of high-energy radiation, particularly by means of laser radiation. The device comprises a processing optic that focuses the radiation onto a processing site and that detects light radiation emanating from the workpiece for a detector of a process monitoring system having a predefined optical axis. The device further comprises an external measuring-light source whose measuring light is reflected from a processing area of the workpiece and is used to perform an optical measurement at the surface of the workpiece. The measuring light is detected by means of the same processing optic that focuses the radiation onto the processing site.

Page 9, first paragraph:

This invention is described with reference to the exemplary embodiments depicted in the drawings, wherein:

Page 11, first paragraph:

Line or area sensors are preferably used for observation accompanied by local resolution. The radiation incident on one or more pixels is analyzed differently according to the sensor arrangement and is assigned to different locations in the processing area. Thus, sensors can be used to observe Zone I, other sensors to observe Zone II, and third sensors of the same detector to observe Zone III. Individual ones of these sensors can form windows that are assigned to only one sub-area of a zone. In particular, some of the sensors of detector 11 are assigned to observe Zone I in order to detect light radiation used for process monitoring, i.e., the secondary light radiation from the vapor capillary 22. Further, at least one additional group of sensors is assigned to detect measuring light that is reflected by the processing area during an optical measurement. Figure 4b provides a representation of light line 30 on the workpiece 20 in which the light line is projected in the shape of a circle. The center of the circle coincides with the vapor capillary [20] 22 and is therefore defined by the position of the optical axis 10. By means of line 30, the workpiece geometry can be tracked ahead of the processing site 40 and in the region of

the finished seam 24. For purposes of explanation, Fig. 4b shows a joint line 42 formed between two mutually abutting workpiece portions. If these workpiece portions do not fit completely snugly against each other, a pit is present and a "fraying" 43 of light line 30 can be seen, since the light is not projected onto workpiece 20 vertically to the plane of representation, but instead, for example as shown in Fig. 5a, at an angle to optical axis 10. In the region of weld seam 24, the "fraying" 43, which is an outward fraying in Fig. 4b, is located opposite a centripetally oriented concavity 44 of the circular light line, since the weld seam is elevated above the level of the workpiece 20. Different seam geometries therefore result in different light paths, for example in the presence of notches, seam convexities, seam concavities or holes. Similarly, mapping of the workpiece geometry ahead of the processing site 40 permits the detection of edge displacement or cracking, for example.

At page 13, third paragraph:

Figure 3 shows the arrangement of a measuring-light source [34] 33 that is disposed inside housing 2 between focusing lens 6 and workpiece 20. Its beams 31 of measuring light are realized as the envelope of a truncated cone, since they generated ring-shaped light. Disposing measuring-light source 33 in front of mirror 8 and lens 6 in the direction of the laser radiation

permits greater latitude of design in the region of the processing optic, and especially in choosing the shape of the measuring-light beam. This shape in turn makes it possible to perform not only distance measurement, but also mapping of the workpiece geometry and the geometry of the melt 23 in addition to process monitoring.